

### **REMARKS**

The Applicant thanks the Examiner for the thorough consideration given the present application. Claims 2 and 6 are cancelled herein without prejudice to or disclaimer of the subject matter contained therein. Claims 1, 3-5, 7, and 8 are pending. Claims 1, 3-5, 7, and 8 are amended. Claim 1 is independent. The Examiner is respectfully requested to reconsider the rejections in view of the amendments and remarks set forth herein.

### **Allowable Subject Matter**

The Examiner states that claims 5 and 7 would be allowable if rewritten in independent form. Applicant thanks the Examiner for the early indication of allowable subject matter in this application. However, claims 5 and 7 have not been rewritten in independent form at this time, since it is believed that independent claim 1, as amended herein, is now in condition for allowance..

### **Drawings**

The Examiner has not indicated whether or not the drawings have been accepted. Clarification is requested in the next official communication.

### **Claim for Priority**

The Examiner has acknowledged the Applicant's claim for foreign priority.

**Information Disclosure Citation**

The Applicant thanks the Examiner for considering the reference supplied with the Information Disclosure Statement filed December 3, 2004, and for providing the Applicant with an initialed copy of the PTO form filed therewith.

**Substitute Specification**

In accordance with MPEP §608.01(q), Applicant herewith submits a substitute specification in the above-identified application. Also included is a marked-up copy of the original specification which shows the portions of the original specification which are being added and deleted. Applicant respectfully submits that the substitute specification includes no new matter and that the substitute specification includes the same changes as are indicated in the marked-up copy of the original specification showing additions and deletions.

Because the number of amendments which are being made to the original specification would render it difficult to consider the case, or to arrange the papers for printing or copying, Applicant has voluntarily submitted this substitute specification. Accordingly, Applicant respectfully requests that the substitute specification be entered into the application.

**Rejections Under 35 U.S.C. §102(b)**

Claims 1-4, 6, and 8 stand rejected under 35 U.S.C. §102(b) as being anticipated by Hemsath et al. (U.S. 3,997,376); and

claims 1-3 stand rejected under 35 U.S.C. §102(b) as being anticipated by Kamio et al. (U.S. 4,570,453).

These rejections are respectfully traversed.

**Amendments to Independent Claim 1**

While not conceding the appropriateness of the Examiner's rejection, but merely to advance prosecution of the present application, independent claim 1 has been amended herein to recite a combination of elements directed to a device for cooling and/or rinsing at least one steel wire and/or ribbon, including:

- driving means for moving at least one steel wire or ribbon,
- a vessel arranged below the at least one moving steel wire and/or ribbon and containing a cooling and/or rinsing liquid, the vessel being provided with outlets from which a certain number of successive curtains of liquid flow turbulently, and
- spouting means for spouting the curtains of liquid from the outlets of the vessel in a rising curtain flow, the at least one moving steel wire and/or ribbon passing through successive curtains, the spouting means comprising:
  - supply means for supplying pressurized gas bubbles in a bottom part of the vessel and
  - guidance means for forcibly guiding the bubbles towards the outlets, the bubbles entraining the liquid upwardly in a form of rising turbulent-flow curtains of liquid.

**Hemsath et al.**

In contrast to the present invention, Hemsath et al. merely disclose a spray mist cooling method which employs a plurality of atomizing spray mist nozzles equally spaced

around the pipe to cool. As it results from col. 2, lines 3 to 7, "Each atomizing nozzle generates a spray off finely atomized water particles of such size that the particles tend to float in air. When such spray mists are directed towards the pipe, they vaporize at or near the pipe surface into water vapor. By controlling the spray mist patterns of the nozzles to overlap one another, an extremely turbulent air layer with water mist and water vapor is formed and completely envelopes the pipe". According to claim 2, it is required that the spray mist be evaporated before to come into actual physical contact with the workpiece to cool.

As disclosed in the present application, the formation of a film of vapor around the wires to cool is to be avoided because it slows down the cooling. The heat exchange is effectively less favorable in a film of vapor (see for example page 1, lines 22 and 23 as well as page 3, lines 8 to 15 of the specification).

As best understood by us, the Examiner has made no difference between a spray mist wherein water is in the form of particles of liquid in suspension in air as in Hemsath et al., and a curtain of liquid wherein water is in the form of a flow-turbulent stream of liquid transported by bubbles of pressurized gas. In the first case, the water particles approaching the workpiece to cool evaporate easily in order to form a film of vapor around this workpiece (what is to be avoided according to the invention). In the second case, the flow-turbulent liquid stream is entrained by gas bubbles and contacts directly the wire to cool without possibility to form any vapor film (see particularly p. 3, lines 11 to 15 of the specification).

*Kamio et al.*

The apparatus of Kamio et al. is conceived to cool continuously metal plate. As it appears from the drawings, this plate is unable to pass through the used water jets. In any case, this apparatus must provide not only cooling means located below the plate, but also cooling means for the upper side of the plate.

The liquid is supplied in the water tank by means of a lower nozzle header 6 which communicates with several ejecting nozzles 5 in order to eject water jet streams 7 on the lower side of the plate, by means of a stream guide duct 8.

The supplied water is consequently under pressure probably by means of a non illustrated pump.

As illustrated on the Kamio et al. drawings, and as indicated in the specification, the length 12 is the length of the guide duct which is under water surface. As it results from col. 9, line 65 to col. 10, line 9, this length 12 may not be too short, because in this case there is a risk of penetration of bubbles of air into the duct which is absolutely to be avoided according to the teaching of this document. Effectively this disadvantage was already disclosed in the description of the technical background, col. 3, lines 28 to 30 and is also mentioned in the last paragraph of the description, col. 12, lines 26 to 28.

In contrast to the cited references, in the present invention, use is made of air bubbles to entrain the liquid curtain towards the wire to cool. There is no liquid pumping system (see page 2, lines 16 and 17 of the specification). The presence of air bubbles in the liquid curtains is

necessary for the transport of cooling water, and also for causing an appropriate turbulence in the stream.

At least for the reasons explained above, the Applicants respectfully submit that the combination of elements as set forth in independent claim 1 is not disclosed or made obvious by the prior art of record, including.

Therefore, independent claim 1 is in condition for allowance.

**Dependent Claims**

The Examiner will note that dependent claims 2 and 6 have been cancelled, and dependent claims 3-5, 7, and 8 have been amended.

All dependent claims are in condition for allowance due to their dependency from allowable independent claims, or due to the additional novel features set forth therein.

Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. §102(b) are respectfully requested.

**CONCLUSION**

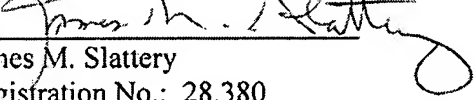
All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. It is believed that a full and complete response has been made to the outstanding Office Action, and that the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, he is invited to telephone Carl T. Thomsen (Reg. No. 50,786) at (703) 208-4030 (direct line).

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17, particularly extension of time fees.

Dated: February 1, 2008

Respectfully submitted,

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